which fluid was partially coagulated by the alcohol in which the brain was immersed previous to its dissection.

In consequence of the large amount of blood lost at the time of the accident and the first forty-eight hours subsequent thereto, the suspension of all nourishment but rice-water, and the profuse discharge from the wound and fungus, the development of active inflammation in the vessels of the brain did not take place, and, therefore, the vigorous use of those measures commonly had recourse to in injuries of this organ, were not demanded, and the treatment being entirely pro re natâ, resolved itself into the use of such means constitutionally and locally as were calculated to allay and remove irritation,—to sustain the powers of life without inordinately increasing their actions. In reference to the fungus, I may mention, however, that twice I attempted to "slice it off," and that my hand was arrested each time by the hemorrhage which followed the removal of the first portion. It is greatly to be regretted that the extension of the injury to the different parts of the encephalon cannot be determined in the order of its invasion of them, and the succession of the symptoms in their relation to this order, as the case of Mr. B. would then be one of the most instructive, as it now is one of the most extraordinary, which the annals of medicine record. On the seventh day from the occurrence of the accident, the secondary symptoms consequent to it were first manifested, and by supposing the irritation from the wound at this time to have just reached the hippocampi, the opinion of Foville will be thus far confirmed, for on the evening of that day articulation became embarrassed, was entirely suspended on the next, and never afterwards recovered. On the ninth, convulsive movements of the muscles of the face and neck occurred, and on the tenth, motor hemiplegia seized the patient, both of which are readily explained upon the supposition, that at this time the corpus striatum became involved. With speculations upon the possible, however, science will not be satisfied. Her stern demand is facts, and having given these, I leave each one to draw such conclusions from them as will be most satisfactory to himself.

ART. IV.—*Observations on the Use of the Sulphate of Quinine in Remittent and Intermittent Fevers, as they occur in Cleveland, Ohio.* By GEO. MENDENHALL, M. D., of Cincinnati, Ohio.

IT is unnecessary here to insist upon the fact that the proper application of the sulphate of quinine in remittent and intermittent fevers is a matter of great consequence. The subject has attracted, and is now attracting, the attention of the profession throughout our country; and although the reports appear to be somewhat discrepant, they may be reconciled by the circum-

stances which attend the administration of the article, differing in the various sections of our widely-extended territory.

While the directions for its exhibition in southern fevers may be entirely applicable to the disease as found in the south, they may not be appropriate to those of more northern latitudes. On the other hand, the rule of practice founded on northern observation may be fatal when applied to the southern fevers; so much are the condition of the system and disease modified by climate. It is only by being furnished with data from different portions and localities, widely distant from each other, and variable in regard to local conditions, that we can hope to arrive at correct conclusions.

So far as my own observation has extended, and from reliable reports, I think there can be no doubt but that different localities, and different seasons vary the condition of disease, in such a manner that it is necessary to vary our remedies to suit these particular changes, and that the proper use of the sulphate of quinine is not an exception to this rule in its applicability to remittent and intermittent fevers. The reports, therefore, of southern practitioners respecting its use in southern malarial fevers ought to be received with great caution, and with some qualification when we attempt to apply their treatment to cases occurring in more northern regions. Upon their authority the tendency of the profession at the present time is strongly inclined towards the adoption of their practice without regard to locality, latitude, or the epidemic constitution of the season. But little has been published in the north on the subject, and from this fact it is inferred that these southern precepts are of universal applicability, which, in my opinion, is a very serious error. From eight or nine years' experience in a northern malarial district, I do not hesitate to say that the directions for the use of quinine as adopted by most southern practitioners, and in some instances by the northern, on the authority of their southern brethren, are seldom proper or called for in northern fevers either in regard to the period of its use or in the quantity of the article administered. That there are cases in the south, and a vast majority perhaps of them too, which will admit of its early application, without much if any preparation, and may even demand it, and also in very large doses, I am not disposed to deny; yet this does not prove its universal adaptation to all cases of malarial fevers, and under all conditions.

For the purpose of illustrating these differences, I will attempt to describe the form of remittent and intermittent fevers, and their proper treatment, as they occurred in Cleveland, Ohio, and its neighbourhood, from the year 1835 to 1843, inclusive of the years named.

This place is situated on the southern shore of Lake Erie, at the northern termination of the Ohio canal, and at the mouth of the Ciugahoga river.

Without describing particularly its topography, I will merely state that the causes which are generally supposed to be productive of remittents and intermittents exist here to a considerable extent, and they are very common

diseases, particularly in the months of July, August, September, and October. In addition to low stagnant marshes and a sluggish stream, the hills are being cut down in making streets, whereby large quantities of comparatively recent deposit are exposed, and which is one fruitful source of disease.

It is said that while the canal was being made in 1827 and 1828, a fever prevailed of unusual fatality, carrying off large numbers of the workmen and the old citizens of the place. Of the particular character of this fever I am uninformed, except that in fatal cases it seldom continued more than four or five days. Whether this was a form such as occurs in southern latitudes and could have been cured by quinine, I cannot, therefore, say.

I am not aware that the fevers of Cleveland differ in any respect from those which occur in the northern part of the State of Ohio generally and in the State of Michigan, except that, perhaps, the malarial influence may act with more power and concentration at some localities than it does at Cleveland.

Symptoms.—The attacks of autumnal fevers, as they occurred there, were generally ushered in by an irregular chilliness, often accompanied by heat of skin at the same time; pain in the head and loins; thirst; anorexia; an indescribable feeling of *malaise;* costiveness in most cases; often slight tenderness over the region of the liver; eyes mostly somewhat injected, with a yellowish tinge of the conjunctiva; skin often of a yellowish hue; and the urine scanty and high-coloured. These were the usual symptoms in the forming stage. On the following day they were sometimes followed by a distinct chill, fever, and sweating stage, without any violent or protracted symptoms of congestion; although during the hot stage there existed severe pain in the head and loins, and sometimes delirium. The fever sometimes passed off almost entirely after the sweating stage, but not always; occasionally there would remain a dry, furred tongue, headache until the following chill, either on the next day or the day succeeding. In other cases the fever continued with a more or less marked remission, without any distinct chills. Generally the exacerbations occurred in the afternoon and evening; they were not, however, always regular, sometimes occurring in the morning, and sometimes twice a day. The thirst was seldom absent before treatment, even when there was a diminution in the heat of the skin, and in the force and frequency of the pulse, although it might have been somewhat abated. This fact of the continued presence or occasional absence of thirst we considered always important in influencing us in the use of the sulphate of quinine, in all the different stages. During the first two or three days of this last or remittent form, its type might have been changed in many instances to the intermittent by venesection, (which was generally demanded by the local determinations to the head, liver, or mucous membranes,) and by the use of active mercurials, followed by saline cathartics. Frequently, for a

few days the symptoms were such that it was impossible to determine which form would be developed, as there might exist irregular chills, fevers, and even the sweating stage; but with the dry tongue, thirst, headache, and other febrile symptoms continuing.

Here it was that the course of medication often determined the result, whether the intermittent, remittent, or continued forms would be developed.

The intermittent, when distinctly marked, could, almost without exception, be cured very easily by a proper course. Neither were the remittents often attended with a fatal result unless from some cause or other they were changed to the continued. I have occasionally seen cases of the remittent attended with a severe pain in the bowels or some other part, which assumed a regular periodicity, occurring at a particular hour every day. These cases would bear the use of quinine sooner than those where the periodicity was not so well marked. In the remittent form as the disease progressed, unless influenced by proper treatment, the local determinations became more evident. The fever, also, became more continued, or marked with a slighter remission, unless we succeeded in obtaining a more perfect remission, in which case the tongue was cleaner and more moist, the secretions from the bowels were improved, and the sulphate could generally be tolerated. Those cases that ran into a more continued form of fever were seldom, if ever, characterized by a distinct crisis. The disease went gradually on until it had acquired its height, and then receded in the same manner, when it terminated favourably so gradually that it would be impossible to say precisely when a change for the better did take place. The improvement might be first manifested by a change in some one function, while the rest of them remained diseased, which rendered it extremely uncertain whether there was any real change towards convalescence or not. It was not, therefore, until we found several of the functions resuming their healthy activity that we could confidently say a crisis had taken place in the disease. I do not recollect a single case which was marked by a clear and distinct crisis or critical discharge of any kind.

Treatment.—As the use of the sulphate of quinine in the treatment of these fevers was so intimately connected with the other means used, each of which had its appropriate application, I must be permitted briefly to detail the course we generally pursued.

The sulphate of quinine formed a very important item in their management, and could not be dispensed with; but in very few cases could it be relied upon as the only treatment.

Venesection.—In a majority of cases this was borne well, and, in fact, was often clearly demanded, but in some seasons more than in others. It generally produced an abatement of the feeling of fullness in the head and liver, as well as afforded some relief to the feeling of oppression which was felt throughout the system generally. After its employment emetics were

better borne; cathartics operated more freely and affected the secretions more favourably. I am fully persuaded, also, that it was a powerful means of changing the remittent and doubtful forms of attack into the more favourable condition of intermittents. It hastened the period of remission and intermission, and of course sooner brought about the time when the sulphate could be used without risk of producing, or aggravating if they existed, those local inflammations which have always to be guarded against in treating our northern fevers. If these local inflammations had already commenced, it was one of our most powerful means in reducing them, without which the use of quinine would be extremely hazardous. The extent to which it was found proper to carry this remedy was to produce a decided impression, and to do this it was sometimes necessary to repeat it.

Local bleeding.—This was also found very beneficial in lessening the effects of, and removing local determinations. It appropriately followed the general use of blood-letting; and when, perhaps, in debilitated subjects, the general abstraction of blood was inadmissible, this form could always be used when any symptoms existed calling for its employment. Cups were in most cases preferable to leeches.

Emetics.—These were applicable frequently in the early stages of the attack, and could be used advantageously, but they were often omitted, and could be dispensed with in most, if not in all cases. I have not myself been in the habit of using them much, from a prejudice which I contracted against them from witnessing the unfortunate and fatal effects of a large dose of tartarized antimony, but I am not aware that I have been any less successful than other practitioners have been. I frequently used emetic substances in nauseating doses in combinations which will be spoken of under another head, and have thought that the effect upon the secretions was quite as well marked and as beneficial as if given in full and decisive doses.

The effect of long-continued nausea in reducing the force of the pulse, equalizing the circulation, determining to the surface, and acting upon the secretions, is a very powerful means of reducing disease, when properly adapted to the case. The use of tartarized antimony as a depressing agent is second only to the use of the lancet; and it is one of our most powerful auxiliaries in the treatment of a portion of the inflammatory diseases we are called on to manage.

Cathartics.—It appears to me to be difficult indeed, if not impossible, to succeed without the use of cathartics in this class of diseases, in some stage or other, in any climate, whether north or south. Dr. Porter, in noticing them in his very judicious and able report in reference to southern fevers, says that "they are always beneficial;" they were particularly so in these forms of which we are speaking, and in fact were indispensable to success. When constipation existed there was no substitute for them, and in fulfilling the indications of correcting the secretory action of the liver, and the removal of irritating secretions from the alimentary canal, a proper selec-

tion from this numerous class was always necessary. They also acted as depletant to the general system, equalized the circulation, and were useful in relieving and removing local congestions and inflammations. The form of their administration, which we often found useful, was the following prescription:—℞. Hydr. chlor. mit. gr. x; Tart. antim. gr. ss; Nitr. potassæ ʒss; div. in chart. iij. M.—One to be taken every third hour, commencing generally at six o'clock P.M. This should be followed by castor oil on the following morning sufficient to operate actively on the bowels. The effect of this was to produce, almost universally, dark-coloured stools, characterized as bilious; in fact, in many cases the discharges consisted of a large admixture of nearly pure bile. The evacuations from the liver, as well as the corrected state of the secretions from it, effected by the mercurial, very soon produced a change in the appearance of the conjunctiva and skin, with an amelioration of all the symptoms in most cases. When the inflammatory symptoms were not so high, it was proper to substitute for the nitrate of potash and tartar emetic, the Dover's powders. This last combination was frequently very proper, because it often had the effect of allaying the general irritability of the system and disposing to a quiet sleep with a gentle perspiration. In these combinations it will be perceived that by the manner which the mercurial was administered in divided portions, and allowed to remain in the stomach for ten or twelve hours, the alterant effect upon the secretions was more fully secured than if purged off immediately, by union with a more active cathartic. The diaphoretic effects of the other part of the prescription are also more certainly produced by the continued manner of its exhibition, and by being given during the usual period of rest; at which time it is probable that its influence will be exerted more favourably on the skin. This form of administering mercurial cathartics I prefer to giving them simply with the view of the immediate cathartic effect. I think when we administer the more active cathartics a few hours after this course, that the operation is much more free, and the effect on the secretions more satisfactory than when given together. But free active purging was indispensable, and when properly applied seldom or never did harm. Where the bowels were irritable, an anodyne was proper; it first lessened the irritability of the mucous membrane, and coincided in its effects with the cathartic in producing a more healthy secretion from it. Cathartics were always indispensable in remittents, and primary attacks of intermittents, in preparing the system for the use of the sulphate of quinine, at least to permit us to get the full and entire benefit of it, both as to its immediate safety, and its permanent beneficial effects on the system. This part of our subject will be alluded to again when we speak of the particular application of quinine, which will be done more at length in the latter part of this paper. This cathartic, alterant and diaphoretic course was, as a general rule, continued for two or three days, and in fact was found necessary before the

secretions were sufficiently restored, and the local determinations removed, so as to permit the use of this invaluable remedy, after which they were occasionally called for; but a repetition of the mercurial was seldom necessary. When it was, the blue mass would answer all the purposes we wished, and was properly used with the quinine when indicated. In the use of mercurials it was always proper to avoid ptyalism, although a very slight action on the gums appeared sometimes to be useful in effecting a favourable change in the disease. I am, however, strongly inclined to the belief that its slight action on the gums is merely an indication that the system has responded to the action of the medicine, or that a general impression has been made by it upon the secretions, and is not in itself of any importance in a curative point of view.

In the very able essay on remittent fever published in this Journal for April, 1842, by Dr. Stewardson, it is stated that he generally relied upon the blue mass in rather small doses as a mercurial in the fevers which he treated in the Pennsylvania Hospital. It may have been quite sufficient in these cases, but I think the effects of calomel in medium doses, as a general rule, are to be preferred. Some of his cases had taken calomel, however, previously to their admission into the hospital, and in these there was less need for its use.

Diaphoretics were almost always necessary in placing the system in a proper condition to bear the employment of quinine; and as we have before stated in speaking of cathartics, they were appropriately combined with them in the early part of the treatment. It was also often necessary to continue them after we had used cathartics freely, when the tongue remained dry, and the skin hot, with thirst, pain in the head, and full or quick pulse. In selecting a diaphoretic it was necessary to be governed by the condition in each individual case, whether we used antimonials, ipecac., the saline diaphoretics, or the sweet spirits of nitre. When these were continued until the tongue became moist, and showed a commencement of cleaning, we could use quinine profitably, but not until then.

The appropriate use of *alterants* was often necessary after we had used them in conjunction with cathartics, and in these cases they were combined with diaphoretics.

Revulsives.—They were often necessary when there were local determinations or pain in any particular part of the body. Cupping, blisters and sinapisms were generally used.

Opium, in its various forms, was often useful in allaying irritability of the bowels when it existed, and in preventing the calomel from passing off, before it had time to act upon the secretions. It also favoured the action of diaphoretics, allayed the irritability of the system, and promoted natural rest, unless, perhaps, in some few cases, where from constitutional peculiarity, or the particular condition of the brain, it might have had a different effect. It always operated better after the employment of the lancet,

in cases admitting of depletion. Very frequently this remedy was found useful conjoined with quinine; and sometimes quinine could be given with Dover's powders or sulphate of morphia advantageously when the propriety of its use, without this combination, was extremely doubtful.

Diet, drinks, &c.—In the remittent form there was very little disposition to take nourishment of any kind before convalescence took place, after which mild farinaceous articles were found most proper until the lapse of a few days, when the lighter kinds of animal food might be used at first, and succeeded by those of a more stimulating description. The premature use of animal food was very apt to produce a return of fever and its consequences; and sometimes the relapse would be very tedious, resulting in a continued form of fever. In the intermittent there was seldom any disposition to eat in primary attacks, but occasionally a case of some standing occurred where the appetite was voracious between the paroxysms. The drinks proper were the mild mucilaginous preparations, such as barley-water, rice-water, slippery elm-water; and, in some cases, warm thin gruel would tend to produce an action of the skin that was beneficial. The acidulated drinks were also very grateful to the patients in allaying thirst and fever; of these cremor tartar dissolved in water, with or without sweetening, lemonade, tamarind water, &c., were used. Acidulated drinks should, however, always be avoided while patients are taking calomel or any mercurial, as they are very apt to cause salivation. I have known profuse and severe salivation produced merely by taking castor oil in a little vinegar and water, a few hours after taking calomel. Of all drinks, cold water, and even iced water appeared to be the most grateful, and I did not hesitate to allow it in small quantities, (one swallow at a time,) often repeated, say every ten minutes, while I was using mercurials. When the thirst was very great and this frequent swallowing of small portions did not allay it, I would permit the patients to take cold water into their mouths, retain it for a short time and then eject it. In this way much could be done in allaying thirst. So far as I have noticed the effect of cold water in producing ptyalism while taking mercury, depends upon the use of large draughts of it, while it may be taken in small portions, as above, without much if any danger. At any rate I have been in the habit of allowing it in this manner, and I do not now recollect a single case of ptyalism from its use.

Quinine.—I will premise the remarks I have to make on the use of this remedy by stating that the fevers of this region are mostly of an intermittent and remittent character, with some cases of the continued type, and they are often changed from one of these to another. These different forms exist also from the distinctly marked intermittent to the continued, in such gradation that at the connecting point it is impossible to say certainly to which of them it belongs; this is the case particularly for the first four or five days. As before stated, the form which is ultimately developed very often depends

upon the treatment pursued. In the employment of quinine great care was necessary in regard to the time of its commencement, and in the preparation of the system for it, and it was a nice point to determine when it could be used with benefit.

As a general rule a depletory and cathartic course was necessary. These, with the other means which have been mentioned, had to be continued until a decided remission or intermission in the febrile action should take place, unless the system became too much reduced to bear them further. When the periodicity was well marked and the tongue began to clean, quinine could be borne, and almost invariably with advantage. The quantity which we have been in the habit of giving during an intermission or distinct remission was from ten to fifteen grains, dividing it into about five equal portions, and watching the effects of each dose (which were given about two hours apart,) until after the administration of the first two or three. When perspiration followed its use there could be no question of the propriety of its exhibition, and the result was then in all cases satisfactory. On the other hand, when the skin became drier with increased heat, increase of thirst, cephalalgia and delirium, we did not dare to proceed with it. Occasionally it could with great certainty be predicted whether the results of its employment would be favourable or unfavourable; but, as a general rule, if we were unable to see the patient after the remedy was commenced, it was necessary to leave provisional directions in regard to its continuance. If the quinine was borne, it was seldom necessary to repeat it on another day in intermittents, as it scarcely ever failed in arresting the paroxysm. If it did not, the febrile stage of the paroxysm generally ran higher; but the next could be easily interrupted by a repetition of the same course with almost absolute certainty, and even without a repetition of the remedy the paroxysm would seldom return. In remittents we had to proceed with greater caution, the effects had to be more closely watched, and when the remedy was borne, a longer use of it was necessary, but generally in smaller doses. Our experience in cutting short remittents was not near so satisfactory as it was in intermittents.

Patients are generally very anxious to have the paroxysms broken up, and it is therefore desirable to commence the use of quinine as early as possible. When doubt existed as to the propriety of using it, it might often be given combined with some diaphoretic; and of these the sweet spirits of nitre is one of the best, if not the very best. I always use it unless there is the most perfect certainty that quinine will be tolerated without the unpleasant symptoms spoken of. I was first led to its use by the recommendation of Professor Chapman, in his lectures ten or eleven years ago, and I have been highly gratified with the result. I am confident that I have, by conjoining it with quinine, broken up cases of chills and fevers, in feeble and debilitated patients particularly, where the febrile stage ran on without any great abatement until the commencement of the succeeding

chill that must have succumbed to the effects of the repeated paroxysms. But in these cases the preparatory treatment had been instituted, the fever was moderated, the tongue was somewhat cleaned, the secretions were generally more or less restored, and the only indication remaining to be fulfilled was the interruption of the debilitating paroxysms. It was these paroxysms which were wearing the patient out, and not the local determinations, for they were removed. This combination of a diaphoretic with quinine often has the happiest effects; it appears to determine in a great measure the excitant effects of the quinine to the secretory action of the skin, and what under other circumstances might have produced dryness and heat of the surface results in a profuse perspiration like the sweating stage of an intermittent. Here, instead of coinciding in its effects with the disease, a crisis is forced upon it, and the train of morbid associations is broken up.

The dose which we have mentioned never disappointed us in our expectations of its effects when it could be tolerated, and we therefore considered that its employment in larger quantities was at least unnecessary if not injurious.

When it was used before the system was prepared for it, the danger consisted in converting an intermittent into a remittent or continued fever, and in the case of remittents there was great liability of their being converted into the continued form. In such cases we had inflammatory determinations to the brain, and other local inflammations. The fever thus converted into the continued form was with great difficulty controlled by medicines; the local determinations were developed or increased; the patient would not generally bear the use of the lancet, and our hands were in a great measure tied. I am confident that I have seen cases conducted to a fatal termination by the too early use of quinine, which in all probability might have recovered by the use of other means. In that region we seldom or never had cases of the sudden and alarming character which we have reports of from the south; few or none ever died in the paroxysm, but when death did take place it was nearly always from a continuance of the fever, and from the local inflammations that were developed during the progress of the disease; and unless there was *well-marked* periodicity, the use of the sulphate of quinine generally did harm.

The reports of southern practitioners are opposed to this course of treatment and these views, which they characterize as "behind the age." They claim to be correct, which doubtless they are when their treatment is applied to southern fevers, or even to fevers more northern, when they are characterized by the peculiarities of those fevers, instances of which are described by my friend, Dr. Parry, of Indianapolis, in the July number of this Journal for the year 1843.

It might be an important inquiry to ascertain whether even these forms might not be cured with smaller portions of the medicine; but it is an in-

quiry I cannot solve. Medicines should be administered with a view to a particular object, to fulfil an indication or indications,—to produce a decided effect,—and we should use them in such doses as will accomplish this; but, when this is done, we ought not to go beyond it, or perhaps we may produce disease by our therapeutic remedies worse than the one we are trying to cure. This error has already been committed in the excessive doses of the great Samson of the materia medica, calomel, recommended by our southern brethren. Their confidence in it was not much if any less than it now is in sulphate of quinine, and if I am not greatly mistaken, those practitioners of the north who adopted their practice had good cause to repent it. It is to warn them against this error in the indiscriminate use of the present very valuable remedy, sulphate of quinine, that I would insist here.

It is, however, principally to the applicability of their treatment to the fevers of the north, as they generally occur, that I am opposed. Here the system is not depressed, the diathesis is inflammatory, and the continued type of fever is much more apt to be excited. There, there is a great depression of the nervous influence, the periodicity of the disease is strongly marked, and the local complications are such as would be excited by great prostration of the system. This was also the case with the fever described by Dr. Parry, but these are far from being a true type of the majority of the northern fevers. They are confined to particular localities where the causes which produce them operate with peculiar violence, and exhaust the nervous energy with great rapidity.

The *excitant* and *anti-periodic* effects of quinine render it peculiarly applicable to the condition of system existing in these southern malarial fevers, and also in fever where similar symptoms are exhibited. In them the system is overwhelmed by sudden disease, and it must be immediately counteracted, or death will ensue in the paroxysm. The concatenation of diseased actions has not yet taken place; it is, therefore, to this sudden prostration and oppression that our remedies must be directed, and fortunately we have that remedy in the sulphate of quinine. As we have endeavoured to show in the preceding part of this paper, the fevers of the district we have endeavoured briefly to describe are of a different kind. The attacks are more gradual, and present a forming stage, in which the complications soon occur, and require at once the main artillery of our treatment. A partial acknowledgment by some of the southern army practitioners of the views we have here expressed, is made by their admission in regard to northern recruits, who, they say, will not bear quinine well in their first attacks of fever in the south; and this position attains still more strongly when they are attacked and remain in the north, where the system has not undergone, in any degree, the effects of southern exposure and influences.

In regard to the propriety of the use of quinine in northern remittents

and intermittents, under proper restrictions, there can be no doubt; in short, it would be impossible to treat them successfully without it. It is the great *anti-periodic* remedy of the materia medica, not only applicable to remittent and intermittent fevers, but to all cases, under proper regulations, where there is periodicity. But the proper use of mercurials is generally necessary to place the system in a situation to get its most beneficial effects. They go hand in hand, and he who would strike either from our list of remedies, inflicts upon us an injury that cannot be repaired by the substitution of any others in the whole catalogue.

When quinine was given prior to the correction of the secretions, its effects appeared to coincide with the tendencies of the disease, while if the system was put in order for its use, it counteracted the train of morbid associations. To my own experience, and that of most northern practitioners, I am happy to add that of Professor Kirtland, of the Cleveland Medical College, who has had about twenty-five years' experience in the treatment of these fevers; and it is also known that he is a close observer of the effects of remedies. In speaking of the fevers of northern Ohio, he says, "in regard to the coinciding tendencies of bark and its preparations, in malarious disorders, if used before the morbid action in the hepatic system has been changed, and a proper condition of the whole system established, they are too evident to admit of a doubt."

In this Journal for October, 1841, there is a paper by Professor Flint, of Buffalo, in which he speaks of the use of quinine in large doses in intermittent fever. From the fact that he, as a northern physician, highly extols the use of the remedy in large doses, without much, if any preparation, it might perhaps appear to be judicious practice in other than southern intermittents. But there are circumstances in regard to the cases treated by him, which, when taken into account, materially modify our conclusions when we attempt to apply his treatment to general practice. He says that "the majority of cases of intermitting fever which occur in this city" (Buffalo) "are contracted in other localities: that the quantity of malaria seems to be insufficient to induce an attack, excepting in those peculiarly predisposed, or in conjunction with other concomitant circumstances. Not having resided in any locality where the disease is endemic to a greater extent than here, I cannot speak of the success of remedial measures, when the patient is exposed to the continued concentrated action of the morbific principle."

The cases, therefore, which he treated in Buffalo were of foreign origin, being mostly recruits in the army from Michigan and the northern parts of Ohio, where they contracted the disease. I understand him to use the sulphate as *the* remedy to cure intermittents, without any preparatory treatment, and prefer it in this way both for the interruption of the paroxysms, and its permanent curative effects. Now it will be understood that nearly or quite all the cases which he treated so successfully with large doses of

quinine without preparation, contracted the disease at some other place, and that in their removal to Buffalo they were removed away from the "continued, concentrated action of malaria." In these cases, then, one curative means was complied with, which of itself is often sufficient to accomplish a cure, viz., a removal from the cause of the disease. As the patients took the disease at some other place, a considerable time necessarily elapsed from the first attack, before application was made to him; or else it was a relapse from a former attack brought on by fatigue or some indiscretions, which are very common among soldiers. If it was the first attack, then time was given them in traveling to Buffalo, to avail themselves of those preparatory means which we have recommended, and which are so well understood in these districts, that they are very often used without application to a physician; and no doubt but that in ninety-nine cases in a hundred, resort was had to them in these cases, whether in the army or out of it, and if so, this preparatory treatment was nevertheless resorted to, although not advised by a physician. The system, then, in these cases, was prepared, and the quinine acted favourably. His large doses may or may not have done harm, but they were at least, I conceive, unnecessary, as I have repeatedly seen the effects of it quite as favourable in less than one-half the quantities, and that in malarial districts, and under its concentrated influence. The probabilities are that, in the majority of his cases, they were relapses from intermittents previously had, either the same season, or perhaps during a previous year. In all cases of intermittents there is an intermittent diathesis or disposition to periodical attacks set up in the system, which continues in some cases for years, and is liable to be called into play from very slight causes. This applies not only to the development of a relapse of intermittent fever, but other diseases may attack the system and observe this law of periodicity, such as neuralgia, &c. &c. Under these circumstances periodical attacks are easily induced, and without that derangement of the secretions and local determinations which almost invariably attend primary attacks of intermittents.

Persons familiar with districts where intermittents originate, will recognize the frequency of this kind of cases at once. A dose or two of quinine will break up the paroxysm, and unless the secretions are unusually deranged, or there is some inflamed or enlarged organ, little or no cathartic medicine is called for. The liability to relapses is much diminished also by a removal from the district where the poison is generated. Therefore let the paroxysms be interrupted in whatever manner they may, there is much less liability to a recurrence of the disease, unless from the most manifest imprudence. This I believe is the true explanation of the success of the treatment as adopted by Dr. Flint, in a region as far north and situated as Buffalo. Dr. Flint in his paper says, "we are to be guided by the considerations which will arise from the following inquiry:—Will the excitant properties of the tonic," as he calls it, "tend more to

exaggerate the accompanying disease than the series of morbid actions which constitute the paroxysms of fever?" His answer is in the negative in nearly all cases. I must here differ from him in the general rule in northern fevers; although I admit that perhaps cases may happen occasionally where it would be otherwise, but these can generally be distinguished by the nature and violence of the paroxysms. In most cases of northern primary attacks the local determinations and fever precede even the first regular paroxysm, to a considerable extent; and the condition which is opposed to the immediate use of quinine occurs before the paroxysms are developed at least with regularity. His favourable experience can very easily be explained by considering the kind of patients which he treated and the circumstances attending them. Of one thing I am quite certain, that his experience is opposed to that of almost or quite the entire mass of the profession practicing in northern districts, where the disease is generated. I have myself often seen the symptoms previously mentioned, supervene on its use by being ventured upon at too early a period, or prior to a proper preparation of the system for it. I know of no disease upon which the effects of proper remedies are so certain and satisfactory as in intermittent fever. The effect of every mercurial cathartic in the beginning of the disease is clearly visible in the improved appearance and removal of the yellowness of the eye and skin, in the improvement of the secretions; in the equalization of the circulation; in the cleaning of the tongue; and in the general improved appearance of the patient. At this period quinine comes in, raises the drooping energies of the system, puts a stop to the paroxysm, and the patient improves rapidly from that moment. Here is no room for skepticism in regard to the action of remedies; the effects of every dose are apparent, and take place with that certainty that you can predict beforehand what will be the result, and assure your patient of it. I would not dispense with either mercurials or quinine in these diseases; take away either of them and you are crippled in your curative process; and use either of them out of their proper adaptation and you may do much harm. They are not specifics, either of them, in any particular disease, but combine them properly in the treatment of malarial fevers, and you can almost with certainty cure them.

In preventing a recurrence of attacks of intermittents quinine and bark are often useful. For this purpose I generally use the tincture of cinchona combined with that of gentian and serpentaria, in which is put sufficient aloes or rhubarb to keep the bowels in a free, soluble condition.

In some cases I have used the quinine with small portions of blue mass and aloes or rhubarb for the same purpose: these to be taken in sufficient quantities to keep the bowels quite open, but not so as to purge actively. This will generally prevent subsequent attacks, unless there is some very great dereliction from a proper course of living and exercise by the patient.